

THE HISTORY, USE  
AND  
DETAILED EXPLANATION  
OF  
**THE MEXICAN CALENDAR STONE**



BY  
**PHILIPP J. J. VALENTINI, Ph. D.**

(Translated from the German)

**WITH ENGRAVING OF THE STONE**







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(Proceedings of American Antiquarian Society, April 24, 1878.)

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Note by the Committee of Publication.

We are indebted to STEPHEN SALISBURY, Jr., Esq., for a translation of Dr. Valentini's lecture on the "Mexican Calendar Stone," (*"Vortrag über den Mexicanischen Calender-Stein, gehalten von. Prof. Ph. Valentini, am 30. April 1878, in New York, U. S. A., vor dem Deutschges. wissenschaftlichen Verein,"*) and also for copies of a heliotype of the stone itself. The views of the lecturer, as is the case with all discussions in the publications of the society, are left to rest on their own merits. The matter is cognate to the recent investigations in the central portions of our continent, to which attention has been drawn by various communications from Mr. Salisbury, and is clearly and ably set forth by the lecturer. If the system of interpretation applied by Prof. Valentini to the "Calendar Stone" may not be wholly peculiar to himself, but has also been substantially advanced by Senor Alfredo Chavero, a

learned Mexican scholar (see "The Nation," New York, August 8th, and September 19th, 1878,) the fact that two learned inquiries concur in adopting the same conclusion respecting the nature of the monument, and similar principles for the interpretation of its inscriptions, only gives additional weight to their opinions. The collateral estimate, by Professor Valentini, of the real character and purpose of Bishop Landa's phonetic alphabet, is plausible, and very likely to prove to be correct. It is a view that removes all obscurity from the dubious claim of an absolute key to the literal rendering of Mexican hieroglyphies. The aim of the missionary bishop to construct an alphabet from signs familiar to the natives, which might enable him to prepare religious manuals for their benefit, would be no more than has been attempted by other Catholic teachers—for example, among the Indians of Nova Scotia, as described by Father Vetromile.

Impressed, as we are, by the profound philosophy of Judge Morgan's essays upon Indian institutions, civil and political, and much as we admire the acute and exhaustive studies, among authorities, of Mr. Bandelier upon "the warlike customs and organization of the Mexican tribes" and "the distribution and tenure of lands, and the customs with respect to in-

heritance among the ancient Mexicans." we cannot ignore the existence of indications of mysterious advances in science, and a mystical archaeological lore, possibly extending to remote periods of time, which remain unexplained and unaccounted for by their processes of reasoning. There is something for which the theories of these writers do not afford a means of solution. It is exactly this that has excited and bewildered the imaginations of explorers long before Brasseur de Bourbourg and Dr. Le Plongeon, and will continue to bewilder others till its nature and significance are more clearly understood. The successes of Du Chaillu, of Schliemann, and of Stanley, are remarkable instances of triumphant results in cases where enthusiasm had been supposed to lack the guidance of wisdom. If earnest men are willing to take the risks of personal research in hazardous regions, or exercise their ingenuity and their scholarship in attempting to solve historical or archaeological problems, we may accept thankfully the information they give, without demanding in all cases unquestionable evidence or absolute demonstration.

S. F. HAVEN, *Chairman.*

**LECTURE OF DR. VALENTINI**

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GENTLEMEN.—Will you give attention to a lecture, which you have kindly invited me to deliver, though I am not a member of your society? The lecture will treat of certain studies to which I have devoted myself for a long time—the so-called Mexican hieroglyphics, and especially a monument which is known as the Mexican Calendar Stone.

My opinion of the circumstances to which this monument of old Mexican art owes its origin, the explanation of the object, I might say of the subject, which the artist has undertaken to represent,—the description and meaning of the hieroglyphic symbols which appear in detail, of their combination in a harmonious whole, and finally also the establishing of a system by which the deciphering of them is made possible, will demand your time and patience; but by this detailed investigation we shall finally arrive at the desired result. It will be demonstrated that this so-called Calendar Stone did not, as has hitherto been supposed, serve the Mexicans for highly scientific purposes, to wit: Astronomy, but for very pro-

fane purposes, for human sacrifices, with whose blood they thought to conciliate the anger of their gods. The rich sculptures with which the disc is ornamented will prove to be no hieroglyphics concerning the days of the passage of the sun through the zenith of the City of Mexico, or through equinoxial or solstitial points; but I shall be able to demonstrate to you that the artist has succeeded in these sculptures in bringing before our eyes a very abstract theme, namely, that of the division of time, and indeed that peculiar division of time which existed among the people of Anahuac before the Spanish conquest. This is a brief outline of what I propose to discuss in this lecture.

In a lecture which touches so closely the culture and civilization of ancient Mexico, a glance at that culture and civilization would be desirable, but for lack of time I must deny myself that pleasure. I shall call to your minds your recollection of the accounts of the Conquest, of all the impressions you have gathered and retained from your acquaintance with Mexican antiquities, paintings and curiosities. But as I have spoken of this monument as one upon which the divisions of time of this nation are said to be engraved, and as this representation and form of hieroglyphic symbols has

been suggested, I consider it my duty to make some observations for the better understanding of this particular form of writing.

The Mexican hieroglyphics are not to be read in the same manner as those of Egypt or Assyria, by sound. If you look upon a Mexican picture-sheet, and see a sculpture, a group of connected ornaments made up of human heads, animals, flowers, etc., and see them projected either in a horizontal or vertical line, do not necessarily conclude that each ornament in a group is a letter, the group itself a word, and the union of many or few of such groups a sentence, the meaning of which can be deciphered by the aid of the alphabet-key. The Mexicans possessed a language very highly developed; they had expressions for each idea, abstract and concrete, and could convey them with wonderfully subtle shades, full of feeling and rich in thought; but to separate the human voice into vowel and consonant sounds, and to depict each individual one by an arbitrary mark, symbol or letter, and then to form of these letters the sounded word, and to place each syllable one after the other as we do in writing, was to them an unknown art. This has been lately controverted. It is claimed that a Yucatan alphabet has been found, that a Yucatan picture-book, — the so-called *Codex Tro* — has

been thereby interpreted. A gigantic piece of nonsense has thus come to the surface. It is claimed that the Codex is a description of the Yucatecos from the glacial period, of the gradual elevation of the chain of the Antilles, and like antediluvian events. This Yucatan alphabet is nothing more than an attempt by a missionary bishop, Diego de Landa, to teach the natives their own language phonetically, in our manner, but with their own symbols. I will not follow this subject further, but I am willing to give more detailed explanation hereafter if it is desirable.

The Mexicans, as we have said, used no phonetic system, but had an expressive picture-writing. When they desired to communicate with each other, they took the brush and color and depicted the most characteristic scenes of an event on paper. In these representations the fancy of the painter had full play. Each of several artists would depict the same event in a different manner, though there were certain limits to be observed. In expressing the various and daily recurring human dealings they bound themselves to an entirely distinct, conventional method of fixed form. For example, if they would convey the idea of *going*, we find always footsteps leading from one person to another or to a house. If it concerns *speaking*,

there flies always from the mouth of the speaker a flake, representing the breath; when *singing*, the flake is larger, longer, and in a certain measure divided. If they spoke of a certain person whose name was "*Black foot*" they painted close to his head his name in hieroglyphics,—a foot marked with black dots. If he was called "*Water-nose*" they depicted a face over which a little stream of blue water was flowing. If the conquest of a city appeared in their annals, the typical picture of a conquest was a house under whose crumbling roof a triple flame was applied; but in order to show of what city or town they spoke, its coat-of-arms was painted close to it. These coat-of-arms showed in picture their names, and these names were always derived from some peculiarity growing out of their locality, or other prominent circumstance. Most of the cities were located on rising ground, for protection against inundation and the winds. On that account many of the names of cities end in *tepeque*, which signifies mountain. If there grew upon the mountain many *Zapote* trees, and if it was called for this reason *Zapotepeque*, the coat-of-arms is a mountain on which a *Zapote* tree is painted. If many quails were caught on the mountain there was represented the head of a quail.



These brief indications will be sufficient to explain that the so-called Mexican hieroglyphics were nothing but pictures of natural objects, or if collected in groups, were representations of scenes and events of their social and historical life.

To arrive at an understanding, these Mexican paintings should give us as little trouble as if we had one of our own ordinary picture-sheets before us, or any illustration torn out of a book, from whose particulars we had to guess the text which belonged to it. The difficulty of understanding it is as follows: At first sight, our unaccustomed eye is unfavorably impressed; the reason is that the Mexican painters did not draw like the practiced artist of today. They drew, so to speak, like a highly-gifted but untaught child, without regard to the distribution of light and shadow, in mere outlines, in lines sharply defined; but all the main properties of the objects are vividly portrayed, and often exaggerated to caricature. The eye very soon pardons this deformity. We find this method of representation quite to the purpose, for in the great similarity of objects it never leaves a doubt as to what is intended. The peculiar difficulty in interpreting the pictures is that we may not know at all the objects represented. We may not know them in the

first place, for the reason that such objects, today, have entirely gone out of use. To this class belong many pictures of their gods and goddesses, *lares* and *penates* but especially the entire paraphernalia of their complicated heathen worship. Secondly, the pictures may be unintelligible to us because they represent objects which belong only to those countries, zones, and nationalities where they exist: As for instance, certain tropical animals and plants, their utensils for cooking, for art, and for labor. Who, for instance, would recognize the coat-of-arms which we have mentioned above, of *Zapotepeque*, without having previously seen the particular structure of the tree, of its trunk, of its leaves, its flowers and fruits, or if he had seen it in a modern representation, would have recognized that Mexican style of representation? Thirdly, pictures for certain abstract ideas find a place here. Who would know, without being told, that the representation of the idea of a year was a ribbon or rope wound up in form of a knot? In this case, you see, the picture stands not only for the object itself, but for something else which men have been accustomed to associate with its form. The picture is indeed only a symbol. Let these few examples suffice; I must go on.

In overcoming the difficulties I have men-

tioned, and which we meet in the explanation of every Mexican picture-sheet, we have valuable assistance provided. In order to convey to the monarch, Charles V., a picture of the history of the lately conquered people, their customs, their resources, and the number of the newly acquired cities. Mendoza, the first Viceroy of Mexico, created a commission of three Indian painters. One was directed to picture the entire political history of the Mexican people, from the time of their immigration from the north to the execution of the last king. Quauhtemotzin, and to present it exactly as it was pictured in their annals. The second was directed to picture all the cities, or their emblems, and with each the emblems of the products which they sent to the metropolis in payment of their semi-annual tribute. The third was directed to represent the Mexican method of education of both sexes year by year up to 15 years of age, to show how the one was taught to be a good mechanic or soldier, and the other to be a skillful housewife. To each of these pictures an explanatory text was attached. We have therefore in this so-called Mendoza Codex, a political, economical, statistical and social history of the nation; but the most important fact is that care was taken to connect a particular explanation with each individual fig-

ure, and of these there are upwards of a thousand. We have, therefore, explanations of nearly a thousand Mexican objects, exactly as the Mexican presented them, and as all these objects belong to political, statistical and social life, we may be sure that we shall meet them again in each picture-sheet which we may examine. Their recognition will be the easier, as there is no essential change made by the artist in regard to the once-established outline, form, or color. We have, besides, another authentic source of interpretation of Mexican hieroglyphic pictures, in the so-called *Codex Vaticanus*, a picture book, which was prepared by some new Mexican magnate of the church, for the Pope, like that of Mendoza for the Emperor. The *Codex Vaticanus* is a description of Mexican cosmogony, mythology, and the calendar. It is painted in brighter colors than the former, and, like that, each figure is accompanied by a special interpretation. In these we possess, from the earliest time of the Spanish conquest, when a generation of Mexican painters was yet alive, an entirely authentic key for the understanding of their conventional mode of expressing both objects and ideas. Besides these official interpretations, we have many other private ones. Later archeologists, of Mexican and Spanish origin, collectors and

connoisseurs, have supplied us with many excellent works upon this subject, and have settled decisively the idea and meaning of a great number of the figures.

I have thus pointed out the chief sources for the study and understanding of Mexican hieroglyphics. Much still remains to be said. Taken by itself, no one of these picture problems can be explained successfully without a complete acquaintance with the political history of this people, and with their mythology, and without a profound reading of all the Spanish chroniclers, and especially to reports of the early missionaries, who, in order to accomplish their object, the conversion of the natives, were first obliged to become familiar with their mode of expressing their feelings by symbols or pictures. These missionaries have not so far as we know drawn a single picture, but their descriptions of the new and curious objects which came before their astonished eyes, may aid us in understanding the pictures themselves, for they are often so striking that we are sometimes unexpectedly able to find the corresponding picture upon some sculpture or painted sheet.

After this summary description of what Mexican hieroglyphics signify and the sources where we must look for their interpretation,

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permit me, as a trial of my system, to interpret with you such a picture problem. As I mentioned before, this will not be undertaken with a painted picture, but with a sculpture, whose richness offers us an abundance of matter for investigation.

I will, in the first place, inform you in what year, by whose order, and upon what particular festival occasion, this stone disc was first made, where it was buried, and when it was afterwards recovered and brought to light, and what people thought it signified. (The picture which you see here is an exact copy of the best photograph at hand of the Mexican Calendar Stone.)

The disc is wrought from an enormous slab of basaltic porphyry. It stands out in relief from the surface of the block, 9 inches. The diameter is 11 feet 8 inches.

It was, according to our reckoning, about the year 1478, or nearly four hundred years ago, and only two years before the death of the then reigning king of Mexico, Axayacatl, that he was reminded by the high priest of the State of a vow that he had once made: who spoke as follows:—(And I will give the long text of the Indian writer. Tezozomoc, in the fewest words.) \* “The building of the large sacrificial

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\*Kingsborough's Mexican Antiquities, Vol., IX., Cap. 47.9, II. Ternaux-Compans, Paris, 1853, Vol. I., Cap., 54, page 287-293.

pyramid which you have undertaken approaches its end. You vowed to decorate it with a beautiful work, in which the Preserver of Mankind, Huitzilopochtli, could take pleasure. Time presses; do not delay the work any longer. "I think," said the king, "to replace the sacrificial stone which my father once devoted to the God of the Sun, with a new one. Let that be laid aside, but carefully preserved. I will give the laborers provisions and clothing that they may select the most proper stone from the quarries, and I will send the sculptor gold, cocoa, and colored cloth, that he may engrave a picture of the sun as it is surrounded by our other great gods." So the workmen went out and quarried the stone, laying it upon rollers, and 50,000 strong men rolled it along. But as it was upon the bridge of Xoloc, the beams gave way, the bridge broke in pieces, the stone fell into the water, and no one dared to remove it from the bottom of the lake. Then the king was angry and said: "Let them build a new bridge, with double beams and planks, and bring a new stone from the quarries of Cuyoacan. Let them bring a second stone here out of which a trough may be made to receive the blood which flows as expiation from the sacrificial stone." When the stone had been quarried and prepared, and had been rolled over the



bridge in good condition, there was a feast of joy. Here follows a description of bloody combats, the praise of the master, whom the king visited in his workshop, and the report that the stone had been completed by order of the king, with a picture of the sun in the middle, surrounded by the other deities. Again a bloody thanksgiving, celebrated for the completion of the trough, is mentioned. Then was the question asked, how should the immense stone be placed on the pyramid? After it was placed in position, we read that it was sunk in the surface of an altar. The altar is of stone, of the height of 8 men, and of the length of 20 cubits. Before it the trough was placed. Then follows the description of a bloody festival which was held for the dedication of this sacrificial slab, and upon it thousands of victims were slain. The king, as chief sacrificer, on the first day killed a hundred of victims with his own hand, drank of their blood, and ate of their flesh; and so arduous was his labor, and so much did he eat, that he became sick, and soon after died. He had only time to have his portrait sculptured upon the surface of the rock of Chapultepeque, according to the custom of Mexican kings. So much for Tezozomoc's report. That the sacrificial stone here mentioned is identical with this picture, I will, in addition to



the description, bring a still further proof. (See picture of the pyramid in Ramusio's collection.)\*

No doubt this stone served for all their bloody sacrifices up to the year 1521. In that year the Spaniards captured the city, and Cortez ordered the destruction of the entire pyramid, and the canals of the city be filled with its fragments. Neither Cortez nor Bernal Diaz, nor any of the chroniclers of the conquerors, make mention of the existence of any such monument as the afore-described stone. They did not undertake its destruction; nay, they even placed it in the market-place on exhibition, where the pyramid once stood.\* This we

\*Ramusio's *Viaggi Giunti*. 1556, Tom. III., page 306.

\*Señor Alfredo Chavero, of the Liceo Hidalgo of Mexico, in a pamphlet written on the Calendar Stone, (*Calendario Azteca Ensayo Archoeologico por A. Chavero, Secretario perpetuo de la Sociedad de Geografia y Estadistica de México; Segunda Edicion*, Mexico, 1876), has the merit of having first discovered this interesting fact.

A strong proof was hereby given of the identity of our Calendar Stone with that stonedisc of the sun, which King Axayacatl ordered to be inscribed in the table of the altar placed on the platform of the great pyramid. For, if the existing generation of conquerors, according to Duran, recognized the disc exhibited in 1560, in the plaza of Mexico, as that on which Indians, as well as Spanish captives, were sacrificed, and, further, if the Bishop Montufar ordered this disc to be buried on the same spot (the plaza of the city of Mexico), from which in 1790 it was dug out again, there can be no longer any doubt as to the fact that the discs described by Tezozomoc and by Duran, are one and the same, *i. e.* The Calendar Stone.

Señor Chavero's reference is: *Historia de las Indias de la Nueva España*, by Padre Duran, *Edicion de José Ramirez*. Mexico, 1867, Tom. I., pag. 272.

have from a missionary chronicler named Duran between the years 1551 and 1569, who says he has always seen it in the same place, and that there had been so much talk about it, among Spaniards and natives, that finally his eminence the Bishop of Montufar took umbrage, and ordered its burial in the place where it stood, in order that the memory of the infamous actions that had been perpetrated upon it might be removed from sight. Until the year 1790, no one of the many writers on Mexican antiquities has made the least mention of it. In that year the repair of the pavement of the market-place was undertaken. In a deep excavation the laborers struck a slab of stone, which gave such a hollow sound from the stroke of the iron, that they thought a treasure-vault might be concealed under it. When they lifted the slab, they found no treasure vault, but were astonished when they beheld on one side the spectacle of this incomparable treasure of ancient Mexican art. The clergy wished it to be again buried, but the art-loving and liberal Viceroy, Revillagigedo, ordered it to be exposed. He caused it to be built in on the southerly side of the cathedral, in the ashler-work, of one of its towers, so that all could see it. Here it remained until the year 1885

when it was removed to the national museum where it now stands.

No one had then the least idea that such a stone had ever existed, or for what purposes it might have served. The archaeologists said at once that it must have some connection with the worship of the sun. They thought the shield in the centre represented the ancient sun-god, and while they found the always well known twenty pictures of the days of the Mexican month engraved about it in a circle, they gave to the disc the name by which it is still known, the Mexican Calendar Stone.

A professor of astronomy and mathematics Don Leon y Gama, who was much devoted to Mexican antiquities, and who had at the same time a small work on Mexican Chronology in preparation, was officially requested to furnish an interpretation of these rare hieroglyphics. He accepted the commission and produced after twenty months of study and writing, a work in which he maintained the singular idea that the disc had served the ancient Mexicans as an astronomical instrument. He had deciphered five hieroglyphics upon it, of which one represents the day upon which the sun goes in its course from the south through the zenith of the Capital of Mexico, the third and fourth hieroglyphics depict the two days of the pas-

sage of the sun through the point of equal day and night, the fifth is a hieroglyphic of the day of the Summer solstice. As this theory proceeded on the supposition that the Mexicans must have been acquainted with the globular form of the earth, with our divisions by parallels and meridians, and our entirely modern solar system (an assertion of which we have positive proof to the contrary); and still further, as Gama could not furnish the main proof,—to identify the five hieroglyphics, or to prove that they appear at all in any painting or sculpture—and as no authentic interpretation could be given in corroboration of his assertion, this strange astronomical conception of the monument was assailed on its first publication in a book by his own countrymen. He, himself was requested by the scientific men of the city to make a public defence of his theory, and as he did not make his appearance, he and his theory were held in contempt. His description of the disc is inaccurate and in many places entirely false, superficial, and full of imperfections. He disposes of two of the zones on the disc by the simple remark that they represent, the one the *photosphere* of the sun, and the other the Milky Way in the tropical heavens! Gama is up to today the first and only interpreter of this monument.\* In spite of the

want of proof in his assertion and of the ridiculous nature of his conception, he as well as the monument will continue to be quoted by those who are interested to establish the superior culture of the ancient Mexicans.

The artist, as I said before, has selected as the subject of this altar-plate, the division of time. How he has handled his subject exhaustively in the symbolic art manner of his nation on this stone disc I will endeavor to explain to you, and I hope by convincing proofs. I wish to make you acquainted with the system of the Mexican division of time as described by the Spanish missionaries and other writers, all of whom are corroborative of each other.

The Mexican year was a solar year of 365 days. The saying was that one of their oldest

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\*While this translation into English was in preparation, *The Nation*, New York, August 8, 1878, prints an article, in which the claim is made that Señor A Chavero, in the above-mentioned pamphlet, has given us an interpretation of this Aztec monument; that therefore, my claim to be the first interpreter of it, after Gama, is a *mistaken assumption*, and finally, that it is even *particular and striking to what an extent the evidence of the learned Mexican scholar agrees, if not verbatim, at least substantially*, with the contents of my Vortrag.

My answer to these remarks has appeared in *The Nation*, of Sept. 19, 1878. The writer of the article, brought by this answer to an absolute silence regarding that latter imprudent and even odious insinuation, insists however, on his statement that Señor Chavero, has given an interpretation, and has his reply printed at the foot of my answer.

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astronomers, Cipac by name, in order to bring the days of the solar year to a correct number, had added to an old calendar of 360 days, the last five days. Each day had a particular name except this last five, which had no names; they were held as nameless, unfortunate days, and were called *nemotemi*. This year of 365 days was divided into two parts. The larger and first portion, of 260 days, was called *mestli pohualli*, or moon reckoning, *mex*, moon, and

This reiterated claim, I am forced to declare, again, is unjustified. I maintain what is expressed in the Vortrag. Señor Chavero, in continuation of his very interesting pages on the history of the Calendar cut in the stone, attempts in a few additional pages, to explain only a certain set of the hieroglyphics which claimed his main attention; as also A. von Humboldt did when he explained those engraved in the zone of the 20 days. Neither of these scholars, however, has gone over the whole ground of the monument, and endeavored, as I did, to prove that the whole sum of the multifarious symbols will turn out to be, so to speak, a text, the purport of which is a full representation of all those symbols which the ancient Mexicans used for their peculiar *division of time*, and which was chosen by the sculptor as an appropriate subject for the celebration of the lapse of the cycle in the year 1479 A. D.

Now, if A. von Humboldt has given only a fragmentary interpretation of the stone, and never thought to call himself its interpreter, nor has he been called so by others, and neither Albert Gallating nor Brantz Mayer, two scholars who have written largely on the same subject, have pretended or were pretended to be interpreters of the monument, I do not see why Mr. Chavero, under equal conditions as the aforesaid authors, should be called so,—unless the writer of the article, in order to suit his purposes, intended to force upon the term “interpretation” a meaning different from that which science has always given it. To all these gentlemen due merit is given in a larger treatise which I intend to publish. The restrictions of a public lecture forbade more elaborate literary references.

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*pohualli* reckoning. The smaller and latter portion, of 100 or 105 days, was called *tonal-pohualli*, or sun reckoning. Besides this division they divided the year into 18 months, and gave to each month 20 days and these 360 days were the foundation of their reckoning. Each month of 20 days had a subdivision of four weeks of five days. A certain number of years, 52, made what the Spanish writers erroneously called a Mexican century,—*un siglo*. Each year of this period or cycle of 52 years had its particular name. When this cycle ended, the year of the succeeding cycle bore the same names. Finally, the Mexicans reckoned according to the periods of creation, of which they had four. The world was, according to their tradition, destroyed by the sun, and four times was again reconstructed by it. The first destruction was by war, the second by hurricane, the third by rain, and the fourth by a general flood. The traditions of the duration of these periods of creation vary. The name of the year of creation is always the same; they called it a sacrificial knife,—*I Tecpatl*. This year, *I Tecpatl*, forms the basis of all their chronological calculations. The Mexican system of the division of time is exhausted by this statement. Allow me now to make mention of the day which the Mexican astronomers are



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said to have interpolated after a lapse of four years, in order to make the length of the solar year more correct. This assertion, first made by modern writers, is not upheld by a single authentic source. No Indian, no Spanish writer, no picture, no sculpture, gives any justification of such an interpretation. This assertion is not even fortunate enough to belong to the class of well-grounded suppositions; it belongs to the class of learned fictions.

The symbolic figures for the representation of each of these divisions of time we shall find expressed on this disc, and indeed engraved upon the zones, which are always laid concentrically around each other. Let us look first at the centre shield, which is formed by these zones.

A face looks out of it, ornamented with all imaginable decorations. It has a neck-chain, ear-rings from the middle of which feathers depend; from the under-lip hangs down a *tentell*, lip-stone, set with jewels; the forehead is surrounded by a fillet on which are two large jewels, and in the middle is a hieroglyphic symbol. If I do not mistake, the hair is represented braided in skeins. If we analyze the small symbol on the forehead, we shall find the name of the sun-god, *Atonatiuh*, expressed on it. Here, the tub with water in it, and drops



springing out, is the Mexican symbol for water, *atl*, in the *Nahuatl* language of the natives. Above this water rises a disc whose margin is set with four small circles. This is the emblem of the disc of the sun when seen in connection with other objects. The sun was commonly called *tonatiuh*. If the sun-god was intended in his quality of destroyer of the world, and particularly as destroyer by the last great flood, this was expressed by the prefix *Atl*, and both words were blended together and called *Atonatiuh*. In view of this explanation of the name, it is easy to understand why the artist engraved the face with the lineaments of extreme old age. The eye-sockets are deep-sunken, deep wrinkles appear upon the forehead and the cheeks. The chin and jaws are lean and emaciated. The artist did not wish to represent the god as a brilliant constellation, but as the creator, the giver, the divider of time; as the very oldest being that ever existed. We shall find him now surrounded by all the symbols of time.

It is easy to recognize the above mentioned symbols of the day as expressed in 16 hours. It is evident that the four larger pointers indicate sun-rising, meridian, sun-set and midnight. The subdivisions of 8 hours are marked by the smaller pointers, while the 16 hours are indicated by the small towers at corresponding dis-

tances. Their location at exactly equal distances, favors the assumption that they were also employed for dividers, as they occur on every picture or sculpture extant of the sun's disc. But I am unable to tell you why our artist and all his predecessors, instead of further subdividing by pointed indices, have chosen the figure of this small tower.

Let us turn now to the symbols of the 20 days of the Mexican month. You will not find them in the broad zone which surrounds the centre shield, but in the next and smaller one, which is composed of 29 small houses. You will find the picture for the first day, called *Cipac*, at the left of the apex of the pointer of the diadem, as we shall always find the series of days running towards the left. The bristling head of some nameless monster signifies the priest-mask of the astronomer who, as the story goes, interpolated the five days to the 360 of the old sun reckoning. They thus gave to the oldest of their calendar heroes the first place in the circle of days. The second day called *Ehecatl*, wind, is represented by the head of a crocodile with open jaws, and a fillet upon its head. The third day is called *Calli*, house, a Mexican house with flat roof. The floor, rear-wall, roof, ceiling, pillars and cross-beams are clearly defined. The fourth day is *Quetzpalin*, or lizard, the

fifth, *Cohuatl*, or serpent. The sixth, *Miquitzli*, or skull. The seventh, *Matzatl*, a stag. The eighth, *Tochtli*, a rabbit. The ninth is *Atl*, water. The tenth is *Itzcuintli*, a hound. A. von Humboldt expresses surprise that this head is the only one in the entire zone which had its face turned to the right. He had seen it thus in Gama's drawing, but the original shows it in the same position as the rest. The eleventh day is *Ozomatl*, a monkey. The twelfth is *Malinalli*, a creeping plant, a skull surrounded by this parasite,—the decoration of a hero fallen in battle. The thirteenth day is *Acatl*, a cane. This a tropical bamboo, growing only in moist places, and therefore is represented standing in a tub; the bud, breaking from its envelope of leaves, and the stalk are easily recognized. The fourteenth day is *Ocelotl*, the tiger. The fifteenth, *Cozcaquauhtli*, a king vulture. The sixteenth, *Quauhtli*, the eagle. The seventeenth, *Ollin*, a miniature of the great centre shield, the destruction of the world. The eighteenth is *Tecpatl*, the sacrificial knife. The nineteenth is *Quiahuitl*, the head of the statue of the god of rain. And the twentieth day is *Xochitl*, a flower, with the water tub, the growing bud, the fruit, a kernel of corn and stamens.

With these 20 representations of the days in an encircling ring, the unity of the idea of a

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full month is expressed. That these are indeed the symbols of the 20 days is more than confirmed by the many pictures which we possess in the Mexican Codices. It is interesting to observe that none of the painters or sculptors permit themselves to deviate essentially from the once established type of expression, either in outline or in color.

In the interpretation of the following zone, that of the squares with five points enclosed, and also with the other one around this, consisting of small *Glyphs*, there is more of difficulty. No picture or text can be found in accessible sources. In consequence of this lack of external evidence we must try to develop internal explanation of their meaning. Therefore let us first examine the construction and arrangement of their several parts. The zone of the squares is as you see interrupted by the main pointers, and thereby divided into four equal parts. Each of the parts consists of ten little houses. Each of these encloses five points. The prevailing idea that upon this disc the ancient Mexican calendar is represented leads us to suppose that there was in the sequence of the squares as well as in the numbers enclosed therein, a concealed calculation which referred to the calendar. Let us see, now, what product we find by adding the given numbers.

In each part are ten little houses, each with five numbers, therefore we obtain 50 for each part, and 200 for four of them. I frankly confess that I had no idea that the counting of the 900 numbers could be increased to 260, but Gama has shown me the way. He says in his description, always so hastily written regarding this important zone, the following: "In it you find the ancient Mexican reckoning—*Metzlipohualli*; only 200 days are visible. You must look for the missing 60 under the pointers." That sounds very artful. We cannot remove the pointers and look under them. If we could do that we certainly should not find the 60 days under them. Further explanation Gama does not give. But we will take this bare assertion as a hint whose meaning it is worth while to investigate more closely. Is Gama indeed right? and has the artist, forced as he was to show the pointers on the disc, demanded of the observer to look for the missing days in the places which he had to cover with the pointers? Now if these pointers take just as much room as is necessary for placing under them the 60 numbers, or what is the same, 12 small houses, then the reckoning must be right. Let us take a compass, therefore and measure how much space each leg of a pointer covers. We find it takes just the room of one and a half houses.

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One pointer thus gives room for three houses, or 15 numbers. Now as we have only four main pointers, we obtain room for 60 numbers. These 60, added to the 200 which we have already, gives a hypothetical total of 260 numbers. Now the Moon-reckoning, *Metzlipohualli*, has just as many days as we have found numbers here. It is, therefore, very probable that each number is meant to represent a day.

But this is thus far only a supposition. It might be easily said that the reckoning was right merely by accident. Has not the artist himself given some certain indication that directs the observer to find the missing 60 numbers under the pointers? Look at the cross-lines which have been drawn over the pointers; they are in exact continuation of the rings with which the zone is surrounded. The ring-lines reach exactly to the end of the foot of each pointer. We must not suppose them to serve an ornamental purpose. Such a purpose could only have been reached if the artist had drawn all the lines parallel with the contours of the pointers. But by drawing the lines across the pointers, he has certainly indicated his meaning that the zone of the squares is continuous under the feet of the pointers, and that the corresponding numbers are also concealed there.

Still we are not certain whether these so-

found 260 numbers are really symbols of the 260 days of the moon's reckoning. We shall be perfectly sure if we discover besides these 260, the other 105 which complete the year of 365 days.

And in what more fitting place than directly in the following zone, that of the *Glyphs*, may we expect to find the 105 missing days? The arrangement is, as you see, entirely as in the preceding zone. This zone is also divided into parts by the intervening pointers. But we perceive not only four but eight parts. The four little pointers have stepped between the main ones. The zone also has a new symbol, a *Glyph*, which, as it appears to me, is an imitation of a kernel of maize. Evidently the days of the sun-reckoning should be different from those of the moon-reckoning. Consequently the different form of representation is no stumbling-block. The principal thing is that the reckoning permits 105 such *Glyphs* to be found in the zone. Beginning to count, we find 10 *Glyphs* in each of the upper six divisions, and 5 in each of the two lower ones. This gives us 70 visible *Glyphs*. There are still 35 *Glyphs* wanting for the completed number of the sun-reckoning. But we observe that the artist again demanded of us to imagine that the missing number is concealed under the pointers. He



has drawn the lines of continuation of this zone also across the pointers, and not only over the four large ones, but also across the four smaller ones. Nay, he has even (and I am afraid induced by very stupid advice) begun to carve a *Glyph* on the surface of the evening (west) pointer, within the cross-lines. We are therefore certain of his intention for the continuation. Let us, as before, measure to find how many *Glyphs* will go under the space of each foot of a pointer. We find the measure gives one and a half *Glyphs*. We have 16 such spaces, and therefore room for 24 such *Glyphs*. These, added to the 70 which we have, give 94. If we would be consistent we must imagine 10 *Glyphs* more concealed by the feathers of the helmets, and we thus reach the sum of 104 *Glyphs* within the zone, divided into eight parts. Now we are in distress. We need not only 104 but 105 *Glyphs*, and without the discovery of this last one our entire speculation would be good for nothing. Wherever we look upon the monument this one single *Glyph* is nowhere to be found.

Now, gentlemen, the artist must have been just as much at a loss to represent this last *Glyph*, as we are to find it. The number 105, an odd one, does not, as we see, easily allow itself to be divided among the eight divisions



which are equal to each other. This was as clear to the artist as to us. But let us think how, if he had an intention to represent 105 days of the sun in this zone, he could have done it?

In order to help himself, he could have drawn the lower part of the circle, unnoticed by the eye of the spectator, a trifle larger and thus have made room for the 105th. *Glyph*, or he could have carved each of the *Glyphs* in the lower part of the circle a trifle smaller. But the circles as well as the *Glyphs* are uniform. He might have been able to put the missing *glyph* between the openings of the lower large pointer, but he did not; he would thereby have defaced the symmetry of the whole monument. How did he help himself? In the theoretical exposition of the ancient Mexican division of time, I have made mention of the five last days of the year, the *Nemotemi*. In a carved representation of such a division of time as we have on this monument, these five highly interesting days ought not to be wanting. But if they are contained here, then our idea of the purpose which the artist had in his mind will not only be better corroborated, but we shall at the same time be obliged to admit that the artist was perfectly aware of the customary computation of 365 days in a year. Your eyes have, no doubt,

before this found the place where the artist brings to view the five *Nemotemi* days. Here! they are inserted over the large midnight pointer, between the two large lower tablets of the central shield. Now imagine this section, which is indeed nothing else than a portion of the double circle of the year, brought down, and the impression is created as if its central *glyph* occupied just the space where it is missing for the computation of the 105 days of the sun, and in which place the artist did not trust himself to depict it, for reasons which I have already mentioned. In the strongest meaning of the words the artist has not finished his task. He demands that we accept the missing *glyph* as standing with the *Nemotemi*. I think we can accept this proposition. He, as a true artist, has spoken more clearly by a hint than we could ever have supposed at the beginning. He was hard pressed, but he has extricated himself skillfully. "How?" he thought, laughing, "I will leave you to guess!"

Now, for the first time, we have a right to suppose the 260 numbers in the former zone to represent in reality the 260 days of the moon-reckoning. The numbers of each separate zone form the arithmetical complement of the other. Each, separately, gives us an insight in its own peculiar separation of the Mexican

year, to wit, in the so-called moon-reckoning of the 260 days, and in the sun-reckoning of the 105 days.

We have found, up to now, the symbols of the day, those for the 20 days of the month the month itself in the unity of the day-circle. We have found besides, the sum of 365 days as they were divided into 260 and 105 days and finally the five *Nemotemis*. We might ask besides for a representation of the division of the week. Now here it is. The 5 points in each square shall represent the above-mentioned Mexican week of five day.

There remain still to be found representation of the 52-year cycle, and for the four eras of creation.

We shall find the symbol of the cycles of the 52 years engraved in this last and broader zone which surrounds the entire disc. What is the proof of the symbol? We have an external proof of it by pictures in the so-called Mexican Codices. I have selected some for your inspection. Here they are. (See the drawings for the collection of Kings-borough, Codex Vaticanus, pl. 91; Codex Boturini, pl. 10; Codex Tellerianus, pls. 6 and 8.) Compare these pictorial paintings with those sculptured on the zone. You will find that they agree completely. In both a shaft is sunken into a round hole out

of which some involutioned object comes forward. We observe on each of the pictural representations, that each is divided in halves, the one painted gray, the other red. We find the same bipartition on this sculpture. What this symbol signifies becomes clear to us by the observation that on the painted tables, representing the years, we always find the same symbol after the lapse of 52 years. We find it always connected with the symbol of the 52d year. In one place, in Kingsb. Col., Vol. V., Cod. Tel., page 150, pl. 8, it is accompanied by an explanatory text which says, —“This is the mark for the binding together of the 52 years.” In this way its significance as the symbol of the 52-year cycle is established, and an external proof is furnished. The internal proof proceeds clearly from an analysis of the symbol in its different parts.

The shaft represents the stick for rubbing, —*tetlaxoni*, which, put in a round disc of dry wood, produces, by friction, the sacred spark, by twirling it round and round. The volutes are the smoke arising therefrom made red by the reflection from the kindled flame.

For a better and more vivid understanding of the symbol, I will give you in brief words a description of the re-kindling of the sacred fire, as the chroniclers have transmitted it to us.

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The ancient Mexicans had a superstition that the sun-god would destroy the world in the last night of the 52d year, and that he would never come back. To prevail on him to remain, they offered to him of their own free-will the greatest sacrifices; not a human life only, but also on all their hearths and in all their dwellings and temples, they extinguished their fires. They left it to the goodness of the god to give them back this element so necessary to mankind. They broke all their household furniture; they hung black masks before their faces; they prayed and fasted; and on the evening of the last night they formed a great procession to a neighboring mountain. Arriving, there is found a man lying on a circular stone, who gave himself voluntarily as a sacrifice to the god. Exactly at the midnight hour a priest thrust a knife into his breast, tore out the heart, and raised it towards the starry heavens with uplifted hands, while another priest laid a small round block of dry soft wood upon the open wound, and a third priest, springing on the stone and kneeling over the body, placed a hard stick perpendicularly on the block, which he then with his hands caused to revolve. This violent friction produced a spark which was caught up and was immediately carried to a neighboring funeral pile, whose rising flame proclaimed to the

people the promise of the god to delay for a season the destruction of the world, and to grant to mankind a new lease of 52 years of existence. Wherever among the nations in Asia Minor and other parts of the continent of Asia, the worship of the sun prevails, we read always of the same ceremonies at the periodical reproduction of the sacred fire; but perhaps not with the same bloody rites as in Mexico. Three pictures showing the kindling of fire can be seen<sup>1</sup>) on a wood board in the Codex Seldon, pl. 10;<sup>2</sup>) the same procedure over the body of a serpent in Codex Laud, pl. 8, both in the Kingsborough collection, and<sup>1</sup>) the same scene upon a human body in the Codex Veletri, Fol. 34.

In this way the existence of the symbol indicating the larger division of time, the cycle of 52 years, is found to be represented on the monument.

You will observe within the upper part of the same zone, two other groups of sculptures, which give the idea of knots or loops. Such is indeed the case. What do they mean? After a close examination of the painted annals, it appears that this knotted loop is a second symbol, indicating the lapse of a cycle of 52 years. This symbol too, like the former, which represents the rekindling of the sacred fire, returns like it each time at the end of 52 years: and

not closely connected, and underneath it as the former, but crowded in so imperceptibly that I only acquired the knowledge of its existence, when in the collection of Squier I saw a picture of Mexican annals where the artist had not crowded it in but had painted it separately underneath. Near it was written in the *Nahuatl* text the word *Molpiynxihuitl*, — translated it means the binding together of the years. We say, a century has elapsed,—the Mexicans said, we bind the years together.

The copies in both cases are,<sup>1)</sup> in Kingsborough Col., Cod. Buturini, pl. 10;<sup>2)</sup> Codex Squier. I will mention at the same time that the Yucatecos, also the artists of the Palenque sculptures, have used the same knot as a symbol for a period which had elapsed. The discovery of these symbols and the establishing of their chronological signification, will be of value in the future, to throw more light on the history of Central American nations, as soon as we shall have secured more material for study.

We now come to the last of the divisions of time,—to the eras. You will find their symbols represented on the four large tablets which are grouped around the head of the sun-god in a highly original manner. These eras, as I have said, were great cosmogonic epochs, about the duration of which the painters do not seem to



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have entirely agreed. The number of years indicated by them is various. It is sufficient for the moment for us to know that the first era (the table for which is above the sun-god on the right hand) represents the destruction of the world by war. Tradition tells us that tigers went forth and broke the bones of men. The head of this tiger wears an earring with a curled feather, and a tassel depends from the ring. The four numbers shown in this tablet do not signify dates of days or years. Four was the sacred number which appears everywhere, expressed in circles or lines where sun-feasts or objects particularly connected with them were concerned. You see this number, four, repeated in the three other tablets, and also in a larger form in the interstices at the sides of the tablets, and once more in the same manner at the right and left and close to the border of the medallion which incloses the head. But the symbol affixed to the upper tablet at the left, 1 *Tecpatl* (one sacrificial knife), is a genuine symbol of the day, probably signifying the very day in which the festival was celebrated in memory of the first destruction of the world. The second tablet has the symbol for *Ehecctl*, or wind, in memory of the epoch when the world was destroyed by a hurricane. This epoch is separated from the first by the point



of the diadem of the sun-god, and crowded in between these is visible an interesting smaller sculpture,—a wall with towers of varying size, rent, and the crumbling and falling roof lifted by the wind. Observe the small symbol for the breath, or wind, a tassel hanging from the side of the large tower. The destroyed building therefore signifies the royal city, if, as I suppose, the destroyed building means *calli*, or house, and the round button on the roof means *one*, we should have before us the announcement that on the day 1 *calli* a great festival was celebrated to commemorate the second destruction of the world. If we turn the disc half round towards the upper side, we recognize in the third tablet the head of the god of rain,—*Tlaloc*. The world, it was said, had been destroyed for the third time by rain. Rain drops flow down over the nose and the neck of the god. The festival of this destruction seems to have been held on the day 1 *Quiahuatl* (1 Rain), for we see the symbol for this day placed at the foot of the tablet. In the last tablet you find the representation of the fourth destruction of the world by a great flood. Nothing has more strongly led to the supposition that there might exist a connection between this American nation and those of the Orient than the communication which the natives at

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the time of the conquest had made to the missionaries, that such an event had occurred. A great flood, as they report, had inundated the world thousands of years ago. Two persons, man and woman, the one *Corcor*, the other *Xochiquetzal* by name, had saved themselves in a boat and landed on the top of a mountain. After a time a vulture came with a bone in its beak. "The destruction is still going on," said *Corcor*. But after a while a humming bird came with a flower in its beak. This was a sign that things on the earth were again produced. The pair alighted from their boat, and from them are descended the whole human family. This account is regarded in more modern time as a fabrication of the priests and the pictures of it, which are in existence, are considered simply as inventions. (I will show you now such a picture. It is from the work of Gemelli *il giro del mondo*, Vol. VI, and is taken from the so-called picture of the migration of the Aztecs. Out of a sheet of water there projects, as you see, the peak of a mountain; on it stands a tree, and on the tree a bird spreads its wings. At the foot of the mountain peak there comes out of the water the heads of a man and a woman. The one wears on his head the symbol of his name, the head of *Corcor*, a pheasant. The other head bears that of a hand with

a bouquet (*xochitl*, a flower, and *quetzal*, shining in green gold). In the foreground is a boat out of which a naked man stretches out his hands imploringly to heaven). Now, still under the impression of this picture, turn your eyes to the sculpture in the tablet. There you will find represented the flood, and with great emphasis, by the accumulation of all those symbols with which the ancient Mexican conveyed the idea of water,—<sup>1</sup>), a tub of standing water,<sup>2</sup>), drops springing out, not two as heretofore in the symbol for *Atl*, water, but four drops:<sup>3</sup>), the picture for moisture, a snail:<sup>4</sup>), above, a crocodile, the king of the rivers. In the midst of these symbols which in their combination evidently express abundance of water, you will notice the profile of a man with a fillet, and a smaller one of a woman. There can be no doubt that these profiles indicate the Mexican Noah — *Coaxcox*, and his wife — *Xochiquetzal*, and at the same time the story of them, and the pictures representing the story have not been invented by the catholic clergy, but really existed among the nations long before the conquest. At the foot of the tablet stands the date of the festival day 7 *Ozomatl*, or 7 *Apes*.

My task to furnish a proof that the disc contains a complete sculptured representation of the division of time which prevailed in ancient

Mexico, is mostly completed. We have found the 16 hours of the day, the 20 days of the month, the 5 days of the week, the 365 days of the year, the 5 *Nemotemi*, the two subdivisions of the year of 260 days in the moon-reckoning and the 105 day in the sun-reckoning, the symbols for the cycle of 52 years in two different forms' and lastly the four eras.

You will also ask me the signification of another zone—of that which lies between the zone of the sun-reckoning and that of the cycles. We will call it the zone of the rain-god,—*Tlaloc*. By the discovery of entirely analogous pictures in the painted annals "of rain streaming from out of the clouds," the explanation of the twelve sculptures resembling each other, is justified. Under each of these clouds discharging rain you will observe four drops falling on a bed of earth, represented by three furrows in which there lies a seed corn. This was the mode of representing cultivated land. In consideration that on the great sacrificial pyramid there stood, as I showed you on the Ramusio drawing, not only the temple of the sun, but also that of the rain-god,—*Tlaloc*; the artist, on the occasion of the pyramid, to the dedication of the sacrificial slab, brought also his homage to the rain-god, by a representation of the rain, the fertilizer of all things.

But I have not yet completed my explanation of the disc of the sun. The zone of the cycles owes us still more important disclosures. As yet we know only what each of these cycle-tablets means; not what all together signify. As the zone, *Metzlipohualli*, would have remained unexplained if we had looked only at each small house by itself and not at the meaning of them regarded as a whole, so it is here. We shall have to *count* the tablets, in order to solve the problem which it is evident the artist has laid before us in connecting them with each other. It is evident that they must be connected with each other, as a whole series of tablets, and consequently as a series of cycles or festivals. You see each of these tablets brought close to the border of the next one, in the same manner in which the painters used to represent the series of successive years in which the frame of each year appears closely connected with the preceding one. On one disc the series and connection of the sculptured tablets of the cycles begins at the bottom, from the two heads decorated with helmets. Whom these heads represent I am unable to tell. The artist may have had in his mind to represent the discoverer and improver of the calendar of the sun, from them the zone goes round to the right and left and each half ends in a pointer above. These

two pointers converge towards a conspicuous tablet between them, which crowns the whole disc.

By counting the tablets, we find 12 on each side, and 24 in all. Now if each of these tablets and the corresponding cycles includes 52 years, then 24 such tablets would express a total of 1248 years. What we have to do with these 1248 years has clearly been indicated by the artist. We must bring them into connection with the large tablet at the head of the disc, for nothing can be understood by the two pointers alone. These pointers have a certain function to perform. They are, as it were, the leaders of their respective cycle columns. They move them towards this crown-tablet and thereby indicate that these two columns should be brought into a certain connection with it. The true meaning of this connection will not be understood before we know what the symbol engraved on the crown-tablet may signify. Nothing is easier to decypher. It is that of *Acatl*, a cane, which we have become acquainted with as the symbol for a certain day. We see added to this symbol the number 13; consequently we read 13 *Acatl*. Now as 13 *Acatl* is a well-known name for a distinct Mexican year, to wit, for the last year of a cycle of 52 years, let us translate this year of 13 *Acatl* into our own

chronological language. To do this I simply refer, for I must be brief, to the authentic reduction tables which I can show and explain if it is desired. This year; 13 *Acatl*, changed into our corresponding year will give us A. D. 1479.

A year engraved in such a place as this evokes from the beginning the supposition that it was intended to designate a time in which this work of art was made and consecrated to its public uses. We disperse all doubts if we call to mind the donor of this altar-disc, the king *Arayacatl*, of whom the chronicler, *Tezozomoc*, tells us that, sickening in consequence of his feast of consecration, he lived but a year longer. The reign of this king was from 1466 to 1480. *You see, therefore, how reliable is the report of the historian*, (*Tezozomoc*, and that the symbol, 13 *Acatl*, can not fairly be understood to signify the day 13 *Acatl* of the Mexican calendar, but must be interpreted by the year of this very same name, which year is found equivalent to ours, A. D. 1479). Now, the connection into which the artist wished to bring these two semi-circles of cycles to the year A. D. 1479, was no other, as it seems, than to inform the observer that when in this year, 13 *Acatl*, he carved the altar-disc, he had found mentioned in the annals 24 festivals of the re-kindling of the sacred fire. This therefore in our idiom, would signify



that the Mexicans, in the year A. D. 1479, had a recorded national existence of 1348 years. For this reason, the beginning of their national era would be the year A. D. 231.

It is not difficult for us to guess what particular historical event was meant to coincide with this date, if one is only familiar with all the traditions, the accounts of the missionaries, the collected labors of the chroniclers, and the explanations which have been made even so recently as the last century, relating to the history of the people of *Anahuac*. I cannot go further into details, however interesting they appear to me. Only so much I may say: It is evident from the scrutiny of all the mentioned authorities, that the annals indicate the middle of our third century as the time when the people arrived, who, coming from the three eastern harbors of Central America,—Tampico, Xicalanco and Bacalar—penetrated into the interior of the country, killed the giant who inhabited Cholula, and became, in Yucatan, Honduras, Chiapas and Mexico the founders of those numerous towns and temples whose ruins we today behold with wonder. The disc, therefore, with its chronological zone, should be considered one of the most reliable authorities on the earlier periods of ancient Mexican history. On the one hand it gives a historical date; on



the other hand it confirms one which long ago was only a speculation, and for that reason always regarded with doubt.

[Another question is still to be solved, namely, what use can be made of the symbols for the *ligatures*? Each ligature was found to represent one cycle, and since we have two bundles of these ligatures, each of four symbols, on the disc, the product of multiplying 8 by 52 would give a sum of 416 years. Thus much, however, is clear, that these 416 years were not intended by the artist to be *added* to the 1248 years. Had he so intended, we do not perceive why he should not have increased the number of the 24 tablets to 32 tablets at once. He would have found the room for them, if he had only sought it. In this perplexity, the well known dates of written Mexican history will come to our aid, and lead us on a track, which very probably, will afford a reasonable solution of the problem. All chroniclers agree in speaking of the year's date of a memorable event that occurred in the middle of the 11th century: that of the dispersion and ruin of a mighty and highly cultured race, which for long centuries had swayed the destinies of Anahuac, civilized the ancient indigenous race, laid the foundation of social, political and religious order, and built sumptuous palaces and temples. Yet this na-

tion, at the epoch indicated, afflicted by drought, famine, pestilence, and also by domestic revolution, had given way to the irruption of other races, coming from the North of Mexico. Several Northern tribes we are told, had come, one after the other, settled on the ruins of the former, and gradually adopted from the few and highly civilized remnants that civilization which anciently had formed its glory. The writers commonly give that ancient race the name of the *Tultecas*, to the invading barbarians, that of *Chichimecas*, of which latter, the Aztecs, were those who came last, and who on the lonely island of the Tezcucolagoon, had succeeded in building up the splendid town of Mexico-Tenochtitlan, and very soon arose to such a power, that the surrounding tribes, willingly or not, acknowledged their supremacy.

Now, this total destruction of these so-called Tultecan Empire and the first invasion by Chichimecan tribes from the North, is generally set down in the chronicles under the year date of 1063 A. D. It is a round chronological number and will be found to bear the name of 13 Acatl. If we now incline to make use of this year's date of the overthrow of the ancient Tultecan dynasty set down at 1063 A. D., and would subtract the sum of these eight cyclical ligatures (which is 416) from the date of the

inauguration of the disc, 1479, we should come to the year's date of 1063 A. D. It was the date of the important national event, which could not have escaped the knowledge of the annal-painters, since we learned that they knew enough of their ancient history to carry it back as far as 231 A. D. These 416 years, therefore, would represent the full epoch occupied by Chichimecan history, from 1063 to the year 1469 of our Disc.

Let us now follow this same train of thought and suppose that the artist, who was a Chichimecan by nation, but an Aztec by tribe, when he was writing history with his chisel on the disc, had felt desirous of incorporating on it also a date of special interest to his tribe, the Aztecs, namely, that of the foundation of the Aztecan dynasty, how could he do this better than in the way as it seems he actually did it? We allude to the peculiar circumstance of two tablets of rekindling the sacred fire severed from the language of numbers, represent *two* cycles, which give us the number of 104 years. It happened that exactly in the year 1479 two cycles had elapsed since the ascension of the first Aztecan king, Acampichtli, to the throne of Mexico. This memorable event in Aztecan history we find set down in the printed annals as the year 13 Acatl, or 1375 A. D.

Much more might be said about the contents of this chronological zone, which will not escape the attentive observer, but I must refrain from giving more information just now. I must refrain also from speaking of the conclusions which might now be drawn from the establishing of so early historical data, in explanation of still earlier periods, dates, it is true, which have been indicated solely in the painted annals. I could make you acquainted with what might be understood by the date, *X Calli*, or 137 A. D., particularly in what year the earlier annal make mention of a great eclipse of the sun. Also, with regard to the date 1 *Tecpatl*, about which the calendar, and which correspond, to the year 29 before the birth of Christ. But I have already occupied your time and attention beyond the intended limits, and I close my lecture with my warmest thanks for the honor of so large an audience.

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### NOTE BY THE TRANSLATOR

The references which now appear as footnotes in the *Lecture*, and several paragraphs of the text, were supplied after publication, by Dr. Valentini, at special request, and in the interest of completeness.

A short biographical sketch of the author may not be without interest to his readers. Philipp J. J. Valentini was born at Berlin, Prussia, in 1828. His father was a teacher of foreign languages, and he was early trained to philological pursuits. He was educated in the Lyceum of Rosleben and the Gymnasium of Torgau, and studied jurisprudence at the University of Berlin, where he was appointed *auscultator* of the *Kammer gericht*. Interrupted in this career by political disturbances, he was forced to enter the army. In 1854 he went to Central America with schemes of colonization. He found that the people of Costa Rica could give no account of the entry and settlement of their ancestors in that country; and in pursuit of information, in 1858 he returned to Berlin to discover historical material that might throw light on this obscure point of early Spanish colonization. The first vague results were presented in a dissertation on this question, for which he received the degree of the Ph. D. from the University of Jena.

In 1861 Dr. Valentini revisited Costa Rica, with the intention of viewing localities of conquest and discovery, and making researches among the archives of the five Central American Republics. There he established in union

with Dr. Streber, the first statistical office on a modern plan, and was sent by the government to assist at the foundation of the Atlantic province of Limon (Caribbean Gulf). He visited in schooner and canoe, the west coast discovered by Columbus, Roatan Island, and as far as Boca del Toro. He found that Columbus's report of his fourth voyage from Jamaica was as complete as could be made by that persecuted navigator. Dr. Valentini was encouraged by the government to publish his investigations; but the German and the Spanish texts still remain in manuscript in consequence of a subsequent revolution in that country.

In the course of his studies he arrived at the conviction that the conquest could not be understood without researches into the former history of the Indians, and that chronology is the backbone of the historical account. Indian history is supposed to be written on stone, the copies of which are often of doubtful correctness. Therefore, Dr. Valentini visited Guatemala to inspect the hieroglyphics of Palenque. He was not able to penetrate farther than to the Quiché ruins on account of sedition of the border Indians. To arrive at positive proof that a certain symbol found in the engravings of the named races represented that which the ancient races used for their century was his

fixed purpose. Residing in Guatemala and San Salvador for some time, he completed his MSS. of the "Discovery and Conquest of the Ancient Province of Castilla de Oro," and a "Geography of San Salvador" for the use of schools.

In 1871, Dr. Valentini came to New York, and was able to pursue his studies of Indian hieroglyphics in the Mexican department of the Astor Library. He received from the Smithsonian Institution an original copy of a curious Central American slab, presented to that collection twenty-five years ago, from Tabasco, without explanation. He recognized this as the tablet which J. L. Stephens missed when he explored the oratory. (Travel in Central America, Chiapas and Yucatan, Vol. II., page 346). On this, the supposed symbol for the century is clearly expressed by a *knot*. The same knot, or loop resembling a bow knot, appears also in the Mexican painted hieroglyphics, and particularly on the Calendar Stone interpreted in the Lecture herewith presented. One vertebra of the backbone of Indian history is now recognized. The skeleton can be reconstructed of the disjecta membra, from which important conclusions may be drawn. Dr. Valentini has prepared an essay and interpretation on some of the Pelenque slabs, which contain, however, no history of that people,

but were merely local temple records. He has been, and is now, occupied in languages as a profession.

STEPHEN SALISBURY, JR.









